230

# Argyle Municipal Electric Utility

100 E. Milwaukee Street • Argyle, Wi. 53504-0264 •Phone (608)543-3335 • Fax: (608)543-3272

February 16, 2001

Jim Loock, Chief Electric Engineer
Public Service Commission
610 N. Whitney Way
P.O. Box 7854
Madison, WI 53707-7854

RE: In the Matter of Filing Plans for Appropriate Inspection and Maintenance, PSC Rule 113.0607.

Dear Mr. Loock:

Enclosed for filing are 3 copies of Argyle Municipal Electric Utility's Preventative Maintenance Plan detailing inspection maintenance schedules, condition rating criteria, corrective action schedules, record keeping procedures and report filing schedules as documented in this rule.

Very truly yours,

Randall Martin

Randall Martin
Superintendent

Enclosures

# PREVENTATIVE MAINTENANCE PLAN

# ARGYLE MUNICIPAL ELECTRIC UTILITY

**FILING DEADLINE**

**FEBRUARY 1, 2001**

February 16, 2001

Randall Martin

100 E. Milwaukee Street

Argyle, WI 53504-0246

(608)543-3335

vargyle@mhtc.net

This plan was prepared by the MEUW work group for PSC Rule 113.0607 for use by the 82 municipal electric utilities in Wisconsin and endorsed by PSC staff as meeting the requirements of Rule PSC 113.0607.

## TABLE OF CONTENTS



## FORMS

## I. Preventative Maintenance Plan

The PSC 113.0607 rule reads;

Appropriate inspection and maintenance: system reliability.

(1) PREVENTATIVE MAINTENANCE PLAN. Each utility or other person subject to this chapter, including persons who own electric generating facilities in this state who provide service to utilities with contracts of five years or more, shall develop and have in place its own preventative maintenance plan. This section is applicable to electric generating facilities as set forth at s. 194.491(5)(a)(1), Stats. Each plan shall include, among other things, appropriate inspection, maintenance and replacement cycles where applicable for overhead and underground distribution plant, transmission, generation[1], and substation facilities.

(2) CONTENTS OF THE PLAN. (a) *Performance standard.* The Preventative Maintenance Plan shall be designed to ensure high quality, safe, and reliable service, considering: cost, geography, weather, applicable codes, national electric industry practices, sound engineering judgment and experience.

1 *PSC staff interpretation is that generation applies to individual generators equal to or greater than 50 MW.*

## II. Inspection Schedule and Methods:

The purpose of this plan is to maintain or improve the electrical system reliability with the objective of increased municipal loyalty and satisfaction from our constituents. The goals are to meet and exceed the schedules established in this plan.

Exception reporting (inspected equipment not in good condition) will be the method of documentation on all inspection forms.

The scope of this plan is traditional and uses proven maintenance techniques. Unique operating and maintenance philosophies have not been considered. Also, manufacturer defects will be dealt with as they are communicated to this utility.

| SCHEDULE: | MONTHLY | ANNUAL | EVERY 5 YEARS |
|---|---|---|---|
| Transmission (□69Kv and above) | | X | X |
| Substations | X | X | |
| Distribution (OH & UG) | | | X |

The inspection of Distribution facilities will be by individual substation circuits on a 5-year cycle such that the entire system will be inspected every 5 years. Inspector instructions for inspecting all facilities and forms are included with the plan.

METHODS: Five criteria groups will be used to complete the inspection of all facilities.

1. IR – infrared thermography used to find poor electrical connections and/or oil flow problems in equipment.
2. RFI - Radio Frequency Interference, a byproduct of loose hardware and connections, is checked using an AM radio receiver.
3. SI – structural integrity of all supporting hardware including poles, crossarms, insulators, structures, bases, foundations, buildings, etc.
4. Clearance – refers to proper spacing of conductors from objects, trees and other utility cables.
5. EC – equipment condition on non-structural components such as circuit breakers, transformers, regulators, reclosers, relays, batteries, capacitors, etc.

## III. Condition Rating Criteria:

This criterion, as listed below, establishes the condition of a facility and also determines the repair schedule to correct deficiencies.

0) Good condition

1) Good condition but aging

2) Non-critical maintenance required – normally repair within 12 months

3) Priority maintenance required – normally repair within 90 days

4) Urgent maintenance required – report immediately to the utility and repair normally within 1 week

## IV. Corrective Action Schedule

The rating criteria as listed above determine the corrective action schedule.

## V. Record Keeping

All inspection forms and records will be retained for a minimum of 10 years. The inspection form contains all of the required critical information i.e. inspection dates, condition rating, schedule for repair and date of repair completion.

## VI. Reporting Requirements

A report and summary of this plan's progress will be submitted every two years with the first report due to the Commission by February 1, 2003. The report will consist of a letter documenting the percent of inspections achieved compared to the schedule and a description of maintenance achieved within the scheduled time allowance.

## VII DISTRIBUTION – OVERHEAD INSPECTION GUIDE

STRUCTURE

- Pole Condition
- Pole Leaning
- Crossarm Condition
- Insulators, Deadend, Pin
- Excess Fill or Soil Removal
- Pole Steps
- Grounds Intact
- Ground Molding
- Down Guys
- Guy Markers
- Guy Bonding/Insulator
- Signage - Location Number, Warning Sign
- Customer Equipment
- Conductor
- Tie Wires
- U Guard/Conduit Condition

EQUIPMENT

- Transformers
  - ✓ Oil Leaks
  - ✓ Bushing Condition
  - ✓ Grounding/Bonding
- Capacitors
  - ✓ Fuses Blown
  - ✓ Bushing Condition
  - ✓ Oil Leaks
  - ✓ Tank Bulged
  - ✓ Switches, Oil, Vacuum
  - ✓ Control Conduit/Wiring
  - ✓ Grounding/Bonding
- Switches - GOAB, Inline, Disconnect
  - ✓ Insulator Condition
  - ✓ Operating Handle/Locks
  - ✓ Linkage
  - ✓ Grounding/Bonding
  - ✓ Switch Number
- Cutouts
  - ✓ Insulator Condition
  - ✓ Fuse Size Tag

## VII DISTRIBUTION – OVERHEAD INSPECTION GUIDE (con't)

EQUIPMENT (CON'T)

- Arrestor
  - ✓ Insulator Condition
  - ✓ Connections
  - ✓ Ground Lead Disconnection
- Cable Terminators
  - ✓ Insulator Condition
  - ✓ Grounding/Bonding

CLEARANCES

- Ground Line
- Buildings, Bridges, Swimming Pool, Etc.
- Communications Facilities
- Fuel Tanks
- Other Electric Utilities
- Transmission Lines
- Over Streets, Roads, Alleys, Highways
- Tree Trimming
  - ✓ Clearance From Line
  - ✓ Vines on Poles
  - ✓ Danger Trees

INFRARED SCAN

- Main Three-Phase Feeders
- Priority Overhead Transformer Banks
  - ✓ Bushing Connectors Primary
  - ✓ Bushing Connectors Secondary
  - ✓ General Tank Heating
- Current & Voltage Transformers if Applicable

RFI CHECK

- OH system with AM radio as each circuit is inspected

# OVERHEAD DISTRIBUTION INSPECTION FORM

**Date**_____ **Inspected by**_____ **Sub**_____ **Ckt** _____

| MAP AREA | STRUCTURE | | | | | | | | | | | | | EQUIPMENT | | | | | | CLEARANCE | | | | | COMMENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | Pole Condition/Leaning | Crossarm Condition | Insulators, DE, Pin | Soil Conditions | Pole Steps | Grounds Intact, Molding | Down Guys and Markers | Guy Bond, Insulator | Signs, Loc#, Warning | Customer Equipment | Conductor and Ties | U'Guard/Conduit Cond | RFI Check | Transformer | Switches | Cutouts | Arresters | Terminators | Street Light | Tree Trimming | Ground Line Clearances | Building Clearances | Streets, Roads, Alleys | Communication Clearance | Rating Criteria<br>---<br>0) Good Condition<br>1) Good Condition but aging<br>2) Non-critical Maintenance Required<br>3) Priority Maintenance Required<br>4) Urgent Maintenace Required | Date Item Corrected | Corrected By |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## VIII DISTRIBUTION – UNDERGROUND INSPECTION GUIDE

STRUCTURAL (Exterior & Interior) Transformer, Primary Pedestal, Secondary Pedestal, Switchgear.

- Enclosure Condition
- Level/Leaning
- Security
- Grade/Accessibility (Shrubs, Customer Facilities, Fill/Excavation)
- Numbering
- Voids/Gaps
- Signage - Location Number, Warning Sign
- Pad/Vault Condition

EQUIPMENT

- Transformers
  - ✓ Oil Leaks
  - ✓ Bushing Condition
  - ✓ Grounding/Bonding
  - ✓ Elbows
  - ✓ Arrestors
  - ✓ Feed-Through
  - ✓ Cable Condition
  - ✓ Secondary Connections
- Primary Pedestals
  - ✓ Elbows
  - ✓ Junction Condition
  - ✓ Grounding/Bonding
- Secondary Pedestals
  - ✓ Secondary Connections
- Switches – URD Switchgear
  - ✓ Insulator Condition
  - ✓ Operating Handle Security
  - ✓ Linkage
  - ✓ Grounding/Bonding
  - ✓ Switch Number/Fuse Size & Number

INFRARED SCAN and RFI CHECK

- Main Three-Phase Feeders (Risers & Switchgear)
- Priority URD Transformer Banks
  - ✓ Bushing Connectors Primary
  - ✓ Bushing Connectors Secondary
  - ✓ General Tank Heating

UNDERGROUND DISTRIBUTION INSPECTION FORM Date_____Inspected by_____ Sub_____ Circuit_____

| MAP AREA | STRUCTURE | | | | | | | | EQUIPMENT | | | | IR / RFI Scan | | COMMENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EQUIPMENT LOCATION | Enclosure Condition | Level / Leaning | Security | Grade / Accessibility | Numbering | Voids / Gaps | Signage | Pad / Vault Condition | Transformers, Leaks, Bushings, Grounding,Bonds,Elbows, Arrestors, Cable cond, Connections | Primary Pedestals, Elbows, Grounding, Bonds,Junction cond. | Secondary Pedestals, Connections | Switches, Signage, Insulators, Security, Linkage, Ground, Bonds | Main Three Phase Feeders, Risers & Switchgear | Priority URD Transformers, Bushings and Tank heating | Rating Criteria<br>---<br>0) Good Condition<br>1) Good Condition but aging<br>2) Non-critical Maintenance Required<br>3) Priority Maintenance Required<br>4) Urgent Maintenace Required | Date Item Corrected | Corrected By |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

## IX SUBSTATION - MONTHLY INSPECTION GUIDE

TRANSFORMER MAIN TANK:

- Oil in bushings
- Bushing and arrestor porcelain
  - ✓ Cracks or chips
  - ✓ Rust or dirt
- Oil leaks
  - ✓ Main tank
  - ✓ Sample valves
  - ✓ Radiators
- Radiator bank
  - ✓ warm on top, cool at bottom
- Tank pressure
- Tank oil level
- Temperature gauge
- Cooling fans

TRANSFORMER LTC or VOLTAGE REGULATORS:

- Tank oil level
- Drag hand positions
- Cabinet light
- Operation count
- Tank pressure
- Cabinet heater
- Cabinet contamination

TRANSMISSION CIRCUIT BREAKERS:

- OPEN/CLOSED indicator
- CHARGED/DISCHARGED indicator
- Cabinet light
- Cabinet heater
- Operations counter
- Bushings and supports
  - ✓ Cracks or chips
  - ✓ Rust or dirt
- Line and load side disconnect switches
  - ✓ Properly labeled
  - ✓ Aligned properly
- Handles grounded
- Emergency trip button
- Air / Oil compressors
- Air / Oil pressure gauge
- Spring operated mechanism
- Oil level gauge
- Tank oil leaks
- Reset switch
- Cabinet contamination
- Vents clean
- Gas pressures for GCBs

## IX SUBSTATION - MONTHLY INSPECTION GUIDE (con't)

### FEEDER CIRCUIT BREAKERS / RECLOSERS

- OPEN/CLOSED indicator
- CHARGED/DISCHARGED indicator
- Cabinet light
- Cabinet heater
- Operations counter
- Bushings and supports
  - ✓ Cracks or chips
  - ✓ Rust or dirt
- Line and load side disconnect switches
  - ✓ Labeled properly
  - ✓ Aligned properly
  - ✓ Handles grounded
- Emergency trip button
- Oil level gauge
- Tank oil leaks
- Reset switch
- Cabinet contamination
- Vents clean
- Gas pressures for GCBs

### HIGH AND LOW VOLTAGE BUSS WORK:

- Bushing, insulator, arrestor, and support insulators
  - ✓ Chips or cracks
  - ✓ Rust or dirt
- Bird nests
- Potential transformers bushings
  - ✓ Cracks or chips
  - ✓ Rust or dirt
- Cable terminators
  - ✓ Leaking fluid
  - ✓ Cracks or chips

### MANUAL SWITCHES:

- Properly labeled
- Ground connections
- Positioning and alignment
- Bushing and support insulators
  - ✓ Cracks or chips
  - ✓ Rust or dirt

### MOTOR OPERATED SWITCHES:

- OPEN/CLOSED indicator
- Properly labeled
- Cabinet heater
- Operations counter

## IX SUBSTATION - MONTHLY INSPECTION GUIDE (con't)

CONTROL HOUSE/MISCELLANEOUS:

- Clock displays proper time
- AC/DC load center breakers
- Room temperature
- Rodents
- Panels labeled properly
- Panel lights
- Annunciator panel
- Panel meters
- SCADA system RTU
- SCADA alarms
- Position indicators agree
- Relay target information
- Emergency contact directory & dial tone for phone
- Safety Equipment

BATTERY:

- Liquid levels
- Proper float voltage on charger and battery
- Specific gravity in pilot cell
- Personal Protective Equipment
- Connection corrosion
- Leaking cells
- Dated solution in eyewash station

YARD AND FENCE:

- Fire extinguisher charged
- Fence ground connections
- Fence secured
- Security and emergency lights
- Site base and grade
- Standing water
- Warning signs

# MONTHLY SUBSTATION INSPECTION FORM

INSPECTED BY:

DATE:

SUBSTATION:

| TRANSFORMER MAIN TANK | RATING: 0 1 2 3 4 (Circle One) | | | |
|---|---|---|---|---|
| inspected | X | COMMENTS | DATE CORRECTED | CORRECTED BY |
| Oil in Bushings | | | | |
| Bushing and Arrestor | | | | |
| Oil Leaks | | | | |
| Main Tank | | | | |
| Sample Valves | | | | |
| Radiators | | | | |
| Radiator Bank | | | | |
| Tank Pressure | | | | |
| Tank Oil Level | | | | |
| Temperature Gauge | | | | |
| Cooling Fans | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| TRANSFORMER LTC or VOLTAGE REGULATORS | RATING: 0 1 2 3 4 (Circle One) | | | |
|---|---|---|---|---|
| Tank Oil Level | | | | |
| Drag Hand Positions | | | | |
| Cabinet Light | | | | |
| Operation Count | | | | |
| Tank Pressure | | | | |
| Cabinet Heater | | | | |
| Cabinet Contamination | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# MONTHLY SUBSTATION INSPECTION FORM

INSPECTED BY:

DATE:

SUBSTATION:

**HIGH VOLTAGE CIRCUIT BREAKER / CIRCUIT SWITCHER** **RATING: 0 1 2 3 4 (Circle One)**

| inspected | X | COMMENTS | DATE CORRECTED | CORRECTED BY |
|---|---|---|---|---|
| OPEN/CLOSED Indicator | | | | |
| CHARGED/DISCHARGED Indicator | | | | |
| Cabinet Light | | | | |
| Cabinet Heater | | | | |
| Operations Counter | | | | |
| Bushings and Supports | | | | |
| Line and Load Side Disconnect Switches | | | | |
| Handles Grounded | | | | |
| Emergency Trip Button | | | | |
| Air Compressors - Air / Oil | | | | |
| Air Pressure Gauge - Air / Oil | | | | |
| Spring Operated Mechanism | | | | |
| Oil Level Gauge | | | | |
| Tank Oil Leaks | | | | |
| Reset Switch | | | | |
| Cabinet Contamination | | | | |
| Vents Clean | | | | |
| Gas Pressures for GCBs | | | | |
| | | | | |
| | | | | |
| | | | | |

# MONTHLY SUBSTATION INSPECTION FORM

INSPECTED BY:

DATE:

SUBSTATION:

| FEEDER CIRCUIT BREAKER / RECLOSER | | RATING: 0 1 2 3 4 (Circle One) | | |
|---|---|---|---|---|
| inspected | X | COMMENTS | DATE CORRECTED | CORRECTED BY |
| OPEN/CLOSED Indicator | | | | |
| CHARGED/DISCHARGED Indicator | | | | |
| Cabinet Light | | | | |
| Cabinet Heater | | | | |
| Operations Counter | | | | |
| Bushings and Supports | | | | |
| Line and Load Side Disconnect Switches | | | | |
| Emergency Trip Button | | | | |
| Oil Level Gauge | | | | |
| Tank Oil Leaks | | | | |
| Reset Switch | | | | |
| Cabinet Contamination | | | | |
| Vents Clean | | | | |
| Gas Pressures for GCBs | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# MONTHLY SUBSTATION INSPECTION FORM

INSPECTED BY:

DATE:

SUBSTATION:

| HIGH & LOW VOLTAGE BUSS WORK | | RATING: 0 1 2 3 4 (Circle One) | | |
|---|---|---|---|---|
| inspected | X | COMMENTS | DATE CORRECTED | CORRECTED BY |
| Bushing, Insulator, Arrestor, and Supports | | | | |
| Bird Nests | | | | |
| Transformer Bushings | | | | |
| Cable Terminators | | | | |
| | | | | |
| | | | | |
| | | | | |
| **MANUAL SWITCHES** | | **RATING: 0 1 2 3 4 (Circle One)** | | |
| Properly Labeled | | | | |
| Ground Connections | | | | |
| Positioning and Alignment | | | | |
| Bushings and Supports | | | | |
| | | | | |
| | | | | |
| | | | | |
| **MOTOR OPERATED SWITCHES** | | **RATING: 0 1 2 3 4 (Circle One)** | | |
| OPEN/CLOSED Indicator | | | | |
| Proper Labeling | | | | |
| Cabinet Heater | | | | |
| Operations Counter | | | | |
| locking criteria | | | | |
| | | | | |
| | | | | |

# MONTHLY SUBSTATION INSPECTION FORM

INSPECTED BY:

DATE:

SUBSTATION:

**CONTROL HOUSE/MISCELLANEOUS** **RATING: 0 1 2 3 4** **(Circle One)**

| inspected | X | COMMENTS | DATE CORRECTED | CORRECTED BY |
|---|---|---|---|---|
| Clock Displays Proper Time | | | | |
| AC/DC Load Center Breakers | | | | |
| Room Temperature | | | | |
| Rodents | | | | |
| Panels Labeled Properly | | | | |
| Panel Lights | | | | |
| Annunciator Panel | | | | |
| Panel Meters | | | | |
| SCADA System RTU | | | | |
| SCADA Alarms | | | | |
| Position Indicators Agree | | | | |
| Relay Target Information | | | | |
| Emergency Contact Directory & Dialtone for Phone | | | | |
| Safety Equipment | | | | |
| **BATTERY** | | **RATING: 0 1 2 3 4** **(Circle One)** | | |
| Liquid Levels | | | | |
| Proper Float Voltage on Charger & Battery | | | | |
| Specific Gravity in Pilot Cell | | | | |
| Personal Protective Equipment | | | | |
| Connection Corrosion | | | | |
| Leaking Cells | | | | |
| Dated Solution in Eyewash Station | | | | |
| | | | | |
| | | | | |
| **YARD & FENCE** | | **RATING: 0 1 2 3 4** **(Circle One)** | | |
| Fire Extinguisher Charged | | | | |
| Fence Ground Connections | | | | |
| Fence Secured | | | | |
| Security and Emergency Lights | | | | |
| Site Base and Grade | | | | |
| Standing Water | | | | |
| Warning Signs | | | | |

# X Substation - Annual Inspection Guide

- Check equipment for level
- Check condition of concrete pads
- Perform oil and DGA analysis
- Battery
    - ✓ Intercell strap resistance
    - ✓ Individual cell voltages
    - ✓ Cell specific gravity
- Nameplate legible
- Equipment paint condition
- Proper equipment ID labels
- IR / RFI scans and checks

# ANNUAL SUBSTATION INSPECTION FORM

**Date** _____ **Inspected by** _____ **Substation** _____

| | SUBSTATION INSPECTION CRITERIA | | | | | | | | COMMENTS | MAINTENANCE COMPLETED | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EQUIPMENT LISTING | Check equipment for level | Check condition of concrete pads | Perform oil and DGA analysis | Battery checks - Intercell strap resistance, Individual cell voltages, Cell specific gravity | Nameplate legible | Equipment paint condition | Proper identification labels | IR / RFI scans and checks | Rating Criteria<br>---<br>0) Good Condition<br>1) Good Condition but aging<br>2) Non-critical Maintenance Required<br>3) Priority Maintenance Required<br>4) Urgent Maintenace Required | Date Item Corrected | Corrected By |
| Transformer | | | | | | | | | | | |
| LTC or regulators | | | | | | | | | | | |
| High Voltage Breaker | | | | | | | | | | | |
| | | | | | | | | | | | |
| Feeder CBs / Reclosers | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Switches | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Control house battery | | | | | | | | | | | |
| Transmission line RFI | | | | | | | | | | | |

# XI TRANSMISSION – ANNUAL INSPECTION GUIDE

STRUCTURE

- Pole Condition
- Pole Leaning
- Crossarm Condition
- Insulators, Deadend, Pin
- Excess Fill or Soil Removal
- Pole Steps
- Grounds Intact
- Ground Molding
- Down Guys
- Guy Markers
- Guy Bonding/Insulator
- Signage - Location Number, Warning Sign
- Customer Equipment
- Conductor
- Tie Wires

EQUIPMENT

- Switches - GOAB, Disconnect
  - ✓ Insulator Condition
  - ✓ Operating Handle/Locks
  - ✓ Linkage
  - ✓ Grounding/Bonding
  - ✓ Switch Number
- Arrestor
  - ✓ Insulator Condition
  - ✓ Connections

CLEARANCES

- Ground Line
- Buildings, Bridges, Etc.
- Communications Facilities
- Fuel Tanks
- Other Electric Utilities
- Over Streets, Roads, Alleys, Highways
- Tree Trimming
  - ✓ Clearance From Line
  - ✓ Vines on Poles
  - ✓ Danger Trees

## XI TRANSMISSION – ANNUAL INSPECTION GUIDE (con't)

RFI CHECK

- Splices
- Connectors
- Dead Ends
- Switches
- Structures

## XII TRANSMISSION – 5 YEAR INSPECTION GUIDE

IR SCAN

- Splices
- Connectors
- Dead Ends
- Switches

# ANNUAL TRANSMISSION INSPECTION FORM

Date_____ Inspected by_____ Sub_____ Ckt _____

| MAP AREA | STRUCTURE | | | | | | | | | | | | EQUIPMENT | | CLEARANCE | | | | | COMMENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | Pole Condition/Leaning | Crossarm Condition | Insulators, DE, Pin | Soil Conditions | Pole Steps | Grounds Intact, Molding | Down Guys and Markers | Guy Bond, Insulator | Signs, Loc#, Warning | Customer Equipment | Conductor and Ties | RFI Check | Switches | Arresters | Tree Trimming | Ground Line Clearances | Building Clearances | Streets, Roads, Alleys | Communication Clearance | Rating Criteria<br>---<br>0) Good Condition<br>1) Good Condition but aging<br>2) Non-critical Maintenance Required 3) Priority Maintenance Required 4) Urgent Maintenace Required | Date Item Corrected | Corrected By |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |